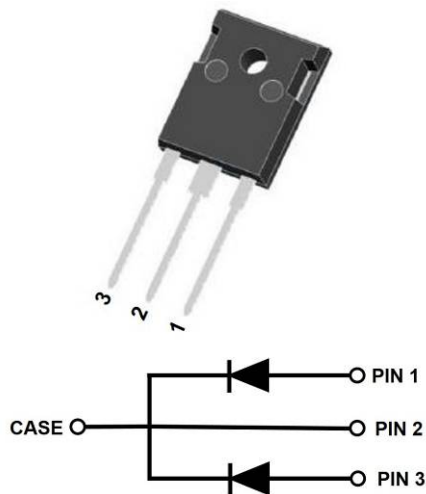


## Silicon Carbide Schottky Diode

$V_{RRM}$	1200V
$I_F$ (135°C)	16A <sup>(2)</sup>
$Q_C$	58nC <sup>(2)</sup>



### Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI

### Typical Applications

Typical applications are in power factor correction(PFC), solar inverter, uninterruptible power supply, motor drives, photovoltaic inverter, electric car and charger.

### Mechanical Data

- **Package:** TO-247AB
- **Terminals:** Tin plated leads
- **Polarity:** As marked

### ■Maximum Ratings ( $T_C=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D112010NCTYG4
Reverse voltage (Repetitive peak) @ $T_j=25^\circ\text{C}$	$V_{RRM}$	V	1200
Reverse voltage (Surge peak) @ $T_j=25^\circ\text{C}$	$V_{RSM}$	V	1200
Reverse voltage (DC) @ $T_j=25^\circ\text{C}$	$V_{DC}$	V	1200
Continuous forward current @ $T_C=25^\circ\text{C}$	$I_F$	A	17/34
Continuous forward current @ $T_C=135^\circ\text{C}$			8/16
Continuous forward current @ $T_C=157^\circ\text{C}$			5/10
Non-repetitive peak forward surge current @ $T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	$I_{FSM}$	A	40 <sup>(1)</sup>
Power Dissipation@ $T_C=25^\circ\text{C}$	$P_{TOT}$	W	82/164
Power Dissipation@ $T_C=110^\circ\text{C}$			35/71
$i^2t$ Value@ $T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$	$\int i^2 dt$	A <sup>2</sup> S	8 <sup>(1)</sup>
Operating junction and Storage temperature range	$T_j, T_{stg}$	°C	-55 to +175

(1) Per Leg, (2) Per Device



# YJD112010NCTYG4

## ■Electrical Characteristics (Per Leg)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	$V_F$	V	$I_F=5A, T_j=25^\circ C$	1.38	1.60
			$I_F=5A, T_j=175^\circ C$	1.90	-
Reverse current	$I_R$	$\mu A$	$V_R=1200V, T_j=25^\circ C$	0.5	25
			$V_R=1200V, T_j=175^\circ C$	5	-
Total capacitive charge	$Q_C$	nC	$V_R=800V, T_j=25^\circ C, Q_C=\int_0^{V_R} I_R C(V) dV$	29	-
Total capacitance	C	pF	$V_R=0V, f=1MHZ$	383	-
			$V_R=400V, f=1MHZ$	27	-
			$V_R=800V, f=1MHZ$	20	-
Capacitance stored energy	$E_C$	$\mu J$	$V_R=800V$	7.4	-

## ■Thermal Characteristics ( $T_a=25^\circ C$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	$R_{\theta J-C}$	$^\circ C/W$	1.81 <sup>(1)</sup> 0.91 <sup>(2)</sup>

(<sup>1</sup>) Per Leg, (<sup>2</sup>) Per Device

## ■Typical Characteristics (Per Leg)

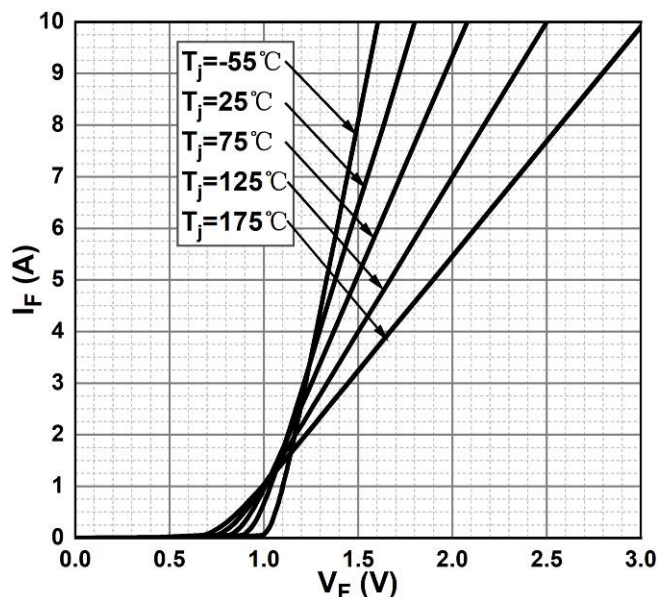


Figure 1. Forward Characteristics

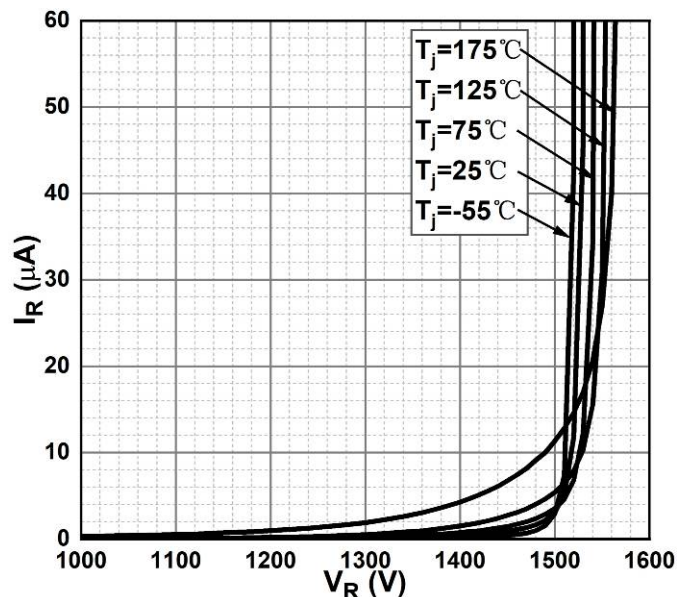


Figure 2. Reverse Characteristics



# YJD112010NCTYG4

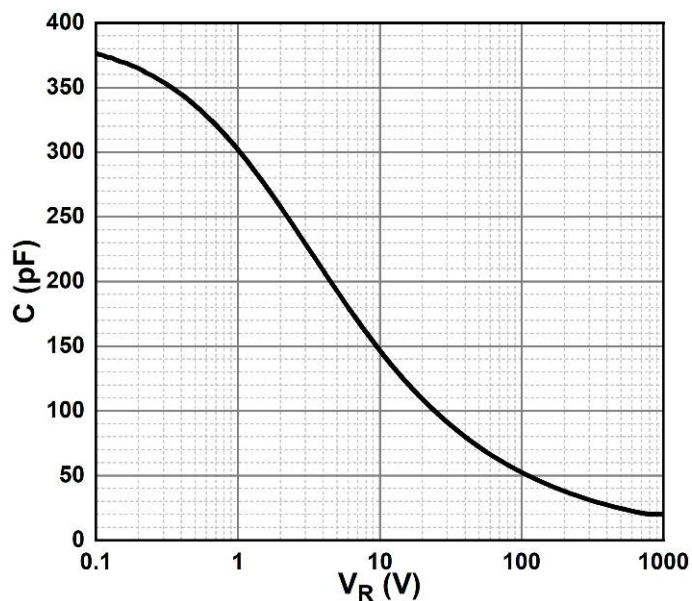


Figure 3. Capacitance vs. Reverse Voltage

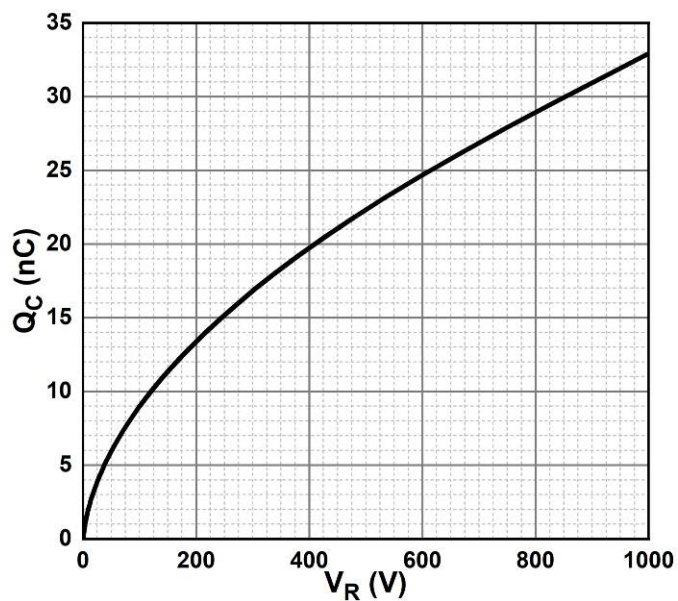


Figure 4. Total Capacitance Charge vs. Reverse Voltage

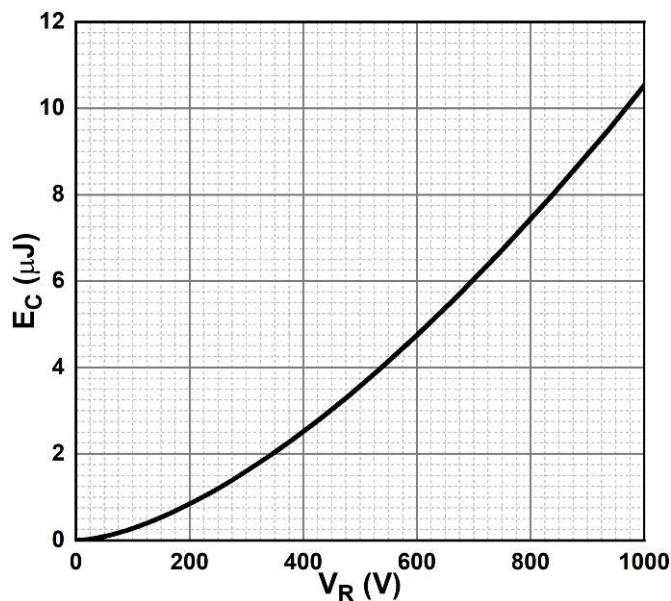


Figure 5. Capacitance Stored Energy

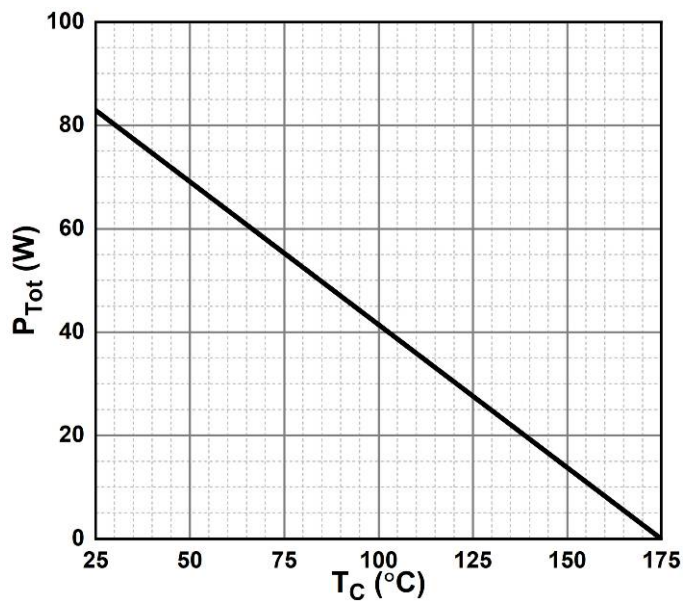


Figure 6. Power Derating

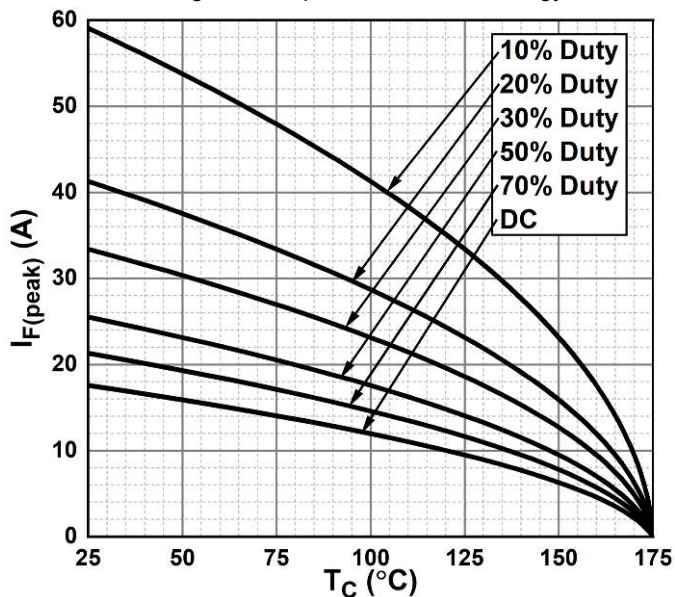


Figure 7. Current Derating



■ Typical Characteristics (Device)

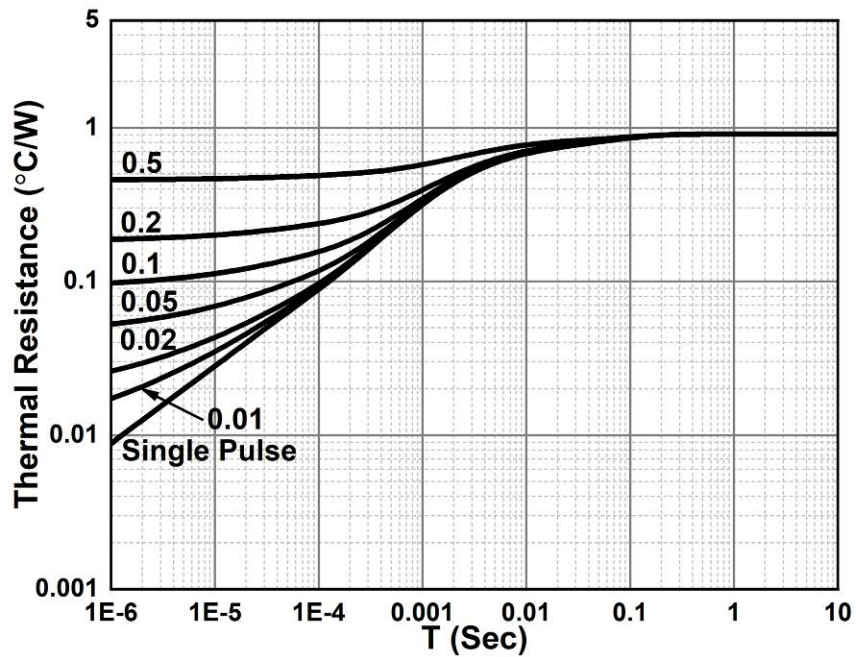


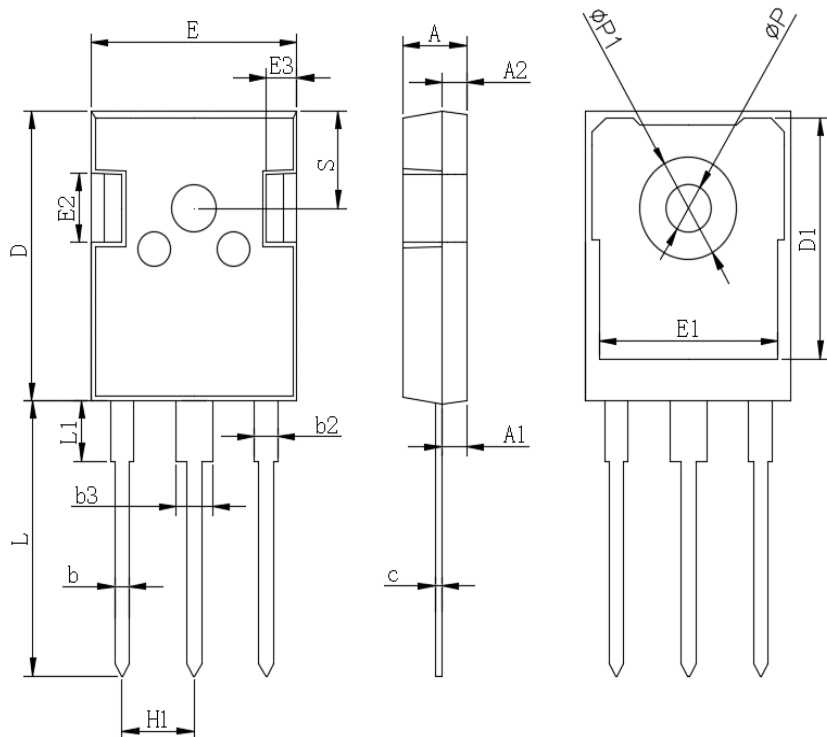
Figure 8. Transient Thermal Impedance



# YJD112010NCTYG4

## ■Outline Dimensions

### TO-247AB



TO-247AB		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.0	1.4
b2	1.91	2.21
C	0.5	0.7
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.0	13.6
E2	4.80	5.20
E3	2.30	2.70
L	19.62	20.22
L1	-	4.30
$\phi P$	3.40	3.80
$\phi P1$	-	7.30
S	6.15TYP	
H1	5.44TYP	
b3	2.80	3.20



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